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EXAMINER

THAI, XUAN MARIAN

ART UNIT

PAPER NUMBER

2181

DATE MAILED: 08/27/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/726,629

Applicant(s)

SATHE ET AL.

Examiner

XUAN M. THAI

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 35-40, 44-49 and 53-58 is/are rejected.
- 7) ☒ Claim(s) 41-43 and 50-52 is/are objected to.
- 8) ☒ Claim(s) 1-34 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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### **DETAILED ACTION**

1. This is in response to communications filed on November 30, 2000. Claims 1-58 are presented for examination in the instant application.

#### ***Specification***

2. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

See page 10, line 21.

#### ***Election/Restrictions***

3. Restriction to one of the following inventions is required under 35 U.S.C. 121:
- I. Claims 1-34, drawn to method of providing a connection for IC package and substrate, classified in class 438, subclass 618.
  - II. Claims 35-58, drawn to apparatus for IC package, classified in class 257, subclass 774.

The inventions are distinct, each from the other because of the following reasons:

4. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the

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invention of Group II can be made by another and materially different process for example two different processes are shown in Figs 18 and 19 can derive at the device as claimed in the inventions of Group II.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. This application contains claims directed to the following patentably distinct species of the claimed invention:

Species I --- Figures 5-8.

Species II --- Figures 9-10.

Species III --- Figures 11-14.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1, 13, 29, 32, 35, 44, 53, 56 are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after

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the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

7. During a telephone conversation with Mr. Walter Nielsen, Reg. No. 25,539, on July 25, 2003, a provisional election was made without traverse to prosecute the invention of Group II and Species I, figures 5-8, claims 35-58. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-34 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

8. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 35-40, 44-49 and 53-55 are rejected under 35 U.S.C. 102(b) as being anticipated by Scholz (USPN 5,329,423).

As per claims 35, 44 and 53, Scholz discloses an electronic package (e.g. Figs. 3 & 4) comprising: a die or an IC package (46); a substrate (substrate 52); and a compressible connector (elements 48,50,54,56,58,60,62,64,66,68,70,72,74,76,78; see col. 5, lines 34-65) to couple the die or IC package to the substrate;

As per claims 36, 45 and 54, Scholz discloses wherein the connector comprises a plurality of electrically conductive elements (e.g. conductive bumps 58 and 60) couple lands (input/output pads 48 and 50) on the die (46) to the corresponding lands (traces 54 and 56) on the substrate (52) [see col. 5, lines 34-65 and col. 6, lines 32-54];

As per claims 37, 46 and 55, Scholz discloses a compression element (compression means; col. 6, lines 47-54] to maintain electrical contact between the lands on the die or IC package and the lands on the substrate;

As per claims 38 and 47, wherein the compressing element is a lid (cap mechanism; col. 5, lines 56-58) comprising a member in contact with the die or IC package and a support coupled to the substrate (see col. 6, lines 47-54);

As per claims 39 and 48, wherein the electrically conductive elements comprise a compressible material (see col. 5, lines 66-67);

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As per claims 40 and 49, wherein the connector comprises a flexible support formed of electrically insulating material (e.g. 70 and 78; see col.5, lines 43-53); and a plurality of elements form of electrically conductive material (e.g. bumps and socket layer; col. 5, lines 38-53).

11. Claims 35-36, 44-45 and 53-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Karnezos (USPN 4,813,129).

As per claims 35, 44 and 53, Karnezos discloses an electronic package (e.g. Figs. 3 & 4) comprising: a die or an IC package (26); a substrate (substrate 12); and a compressible connector (elements 16,32,28,20; see abstract; col. 4, lines 45-67 and col. 5, lines 1-67) to couple the die or IC package to the substrate;

As per claims 36, 45 and 54, Karnezos discloses wherein the connector comprises a plurality of electrically conductive elements (e.g. conductive buttons 16) couple lands (pads 28) on the die or IC package to the corresponding lands (traces) on the substrate (26) [see cols. 4-5];

### ***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 56-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Debenham et al. (USPN 6,365,421; hereinafter Debenham) in view of Scholz (USPN 5,329,423).

As per claim 56, Debenham teach a data processing system (fig. 1) comprising: a bus (18); a processor (12); a memory (14); a display (24). Debenham differs from the current invention by not showing an electronic assembly comprising: an IC package; a substrate; and a compressible connector to couple the IC package to the substrate. However, Scholz teaches an electronic package (e.g. Figs. 3 & 4) comprising: an IC package (46); a substrate (substrate 52); and a compressible connector (elements 48,50,54,56,58,60,62,64,66,68,70,72,74,76,78; see col. 5, lines 34-65) to couple IC package to the substrate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Scholz into the device taught by Debenham since it would be desirable to add functionality to the device.

As per claims 57, Scholz discloses wherein the connector comprises a plurality of electrically conductive elements (e.g. conductive bumps 58 and 60) couple lands (input/output pads 48 and 50) on the die (46) to the corresponding lands (traces 54 and 56) on the substrate (52) [see col. 5, lines 34-65 and col. 6, lines 32-54];



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As per claim 58, Scholz discloses a compression element (compression means; col. 6, lines 47-54] to maintain electrical contact between the lands on the die or IC package and the lands on the substrate.

***Allowable Subject Matter***

15. Claims 41-43 and 50-52 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The claims recited the limitation including a requirement that the support is formed of plastic and the plurality of the conductive elements are formed from a group consisting of wire wads, pins, blobs, lumps, particles *and* crystals.

***Conclusion***

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached Form PTO-892.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xuan M. Thai whose telephone number is (703) 308-2064. The examiner can normally be reached on alternate Monday - Friday from 9:00 a.m. to 7:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner supervisor, Mark Rinehart, can be reached on (703) 305-4815.

The fax phone numbers for the organization where this application or proceeding is assigned are as follows:

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(703) 746-7238 [After Final Communication]

(703) 746-7239 [Official Communication]

(703) 746-7240 [For Status inquiries and draft communication]

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.



XUAN M. THAI  
PRIMARY EXAMINER  
TECHNOLOGY CENTER 2100

XMT  
August 25, 2003